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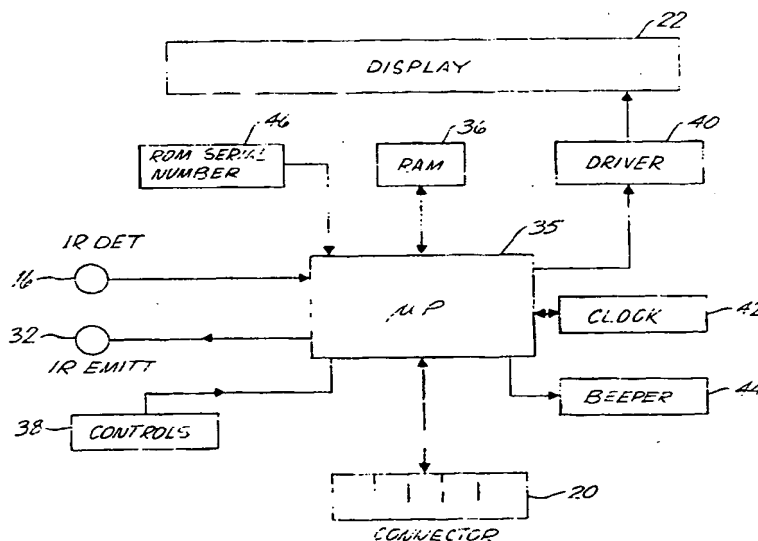
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(54) Title: **PORTABLE ELECTRONIC DATA COUPON**



(57) Abstract

Decoding of data included in the vertical blanking interval of a television transmission signal and storage of the decoded data on a portable data coupon allows unavailable ease of use of commercial discounts, manufactures coupons, and other cost saving devices. The portable data coupon incorporates a receiver (16) for retransmitted encoded data and a storage device (36) for the received data. A display (22) for viewing the data is present in the storage device and a transmitting device (32) is incorporated for selectively transmitting portions of the encoded data for use such as in redeeming a coupon or discount. Selection of data received in the coupon from the VBI to be saved in storage for later redemption is accomplished through interactive input by the user and automatic timing for expiration of data and deletion of data upon redemption are also provided.

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PORTABLE ELECTRONIC DATA COUPON**Background of the Invention****Field of the Invention**

The present invention relates generally to storage of data provided as a nonprogram portion of television transmission signals. In particular, the invention provides a system for decoding data included in the vertical blanking interval of a television transmission signal and a portable data coupon for storage of selected information from the data received by the system for future use.

Prior Art

Television broadcast signals provide significant windows in the signal for insertion of data in addition to the required program signals for video and audio reception. The vertical blanking interval (VBI) of the television transmission signal has been employed in the past for data to provide closed captioning for the hearing impaired.

Decoders for data provided in the VBI are well known in the art and standards are being developed for data formats to usefully employ the VBI for transmission of additional data. Typical uses of VBI data to date have been similar to closed captioning wherein data received in the VBI is decoded and provided as a separate video signal for printing of information to the television screen for viewing by the user. Capability of prior art systems to decode, store and usefully employ data which can be provided in the VBI has been extremely limited.

Exemplary of data which may be provided in the VBI are channel specific program information such as short term upcoming program schedules and program related information such as statistics of baseball players during a baseball game, recipes provided during a cooking lesson, problem assignments and answers after an educational program and other related information displayed on the screen relevant

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1 to the program being viewed. The majority of this type of information may be
displayed or is desirable to be displayed concurrently with existing video
programming. Consequently, systems for decoding and presentation of the desired
information rely on essentially identical technology to the closed caption systems
5 previously described.

Significant additional information may be disseminated through the use of
VBI signaling, however, practical systems for storage and use of the data to be
provided are not presently available. Commercial information such as supplemental
telephone number information, identification of local dealers and supplemental
10 product/price information in addition to the video and audio presentation of a
common television commercial are desirable. For greatest benefit this information
should be available subsequent to the presentation of the video/audio commercial
and should be stored for subsequent access and/or use. Merely overwriting the
existing video of a commercial with additional information presented in the VBI
15 produces no more favorable result for the advertiser than the materials in the
commercial itself. Such information conveyed on video is fleeting and most
viewers are not disposed to take any action while actually viewing a commercial.
Transmission of data on the VBI which can be captured and displayed subsequently
on the screen at the command of the user extends the usefulness of the real time
20 broadcast adding "virtual time" in which potential customers may review important
sales related information at their leisure.

As a portion of the concept of providing commercial information, discount
information for sales or services may be provided. At the present time discounts
are typically provided in the form of coupons distributed to consumers in print form
25 such as newspapers, magazines, store dispensers and so on. The coupon is
removed from its source by the consumer and brought to the store for redemption.
Most coupons presently employ a UPC code number in the form of a bar code to
allow easy confirmation of product, discount value, expiration date and other
information for comparison with the goods actually purchased by the consumer to
30 avoid coupon fraud.

The availability of the transmission medium for "coupon" information in the
VBI of television transmission signals opens a new channel for both the advertiser
and consumer in the field of commercial communications. The present invention
provides a method and system whereby such commercial information may be
35 obtained, stored and used conveniently to obtain the greatest benefit from the
presentation medium.

Summary of the Invention

The present invention provides an apparatus for receiving, storing and using commercial or other data provided by transmission during the VBI of a television broadcast signal. A controller which is connected to receive television transmission signals incorporates a VBI decoder for extracting encoded data from the vertical blanking interval of the television transmission signal. A retransmitting device is provided by the controller for sending the VBI data which is received to a portable data coupon. The portable data coupon incorporates a receiver for the retransmitted encoded data and a storage device for the received data. The data coupon includes a display for displaying data present in the storage device which is routed through an internal decoder to provide an alphanumeric read out. The coupon further includes a transmitting device for selectively transmitting portions of the encoded data to a receiving apparatus for use.

A memory included in the controller provides additional flexibility for receiving the encoded data from the VBI decoder and subsequently transmitting the data to the portable data coupon. A multiplexer in the controller determines selection of memory storage or immediate retransmission.

A memory equipped controller also includes a receiver which is employed to receive data transmitted by the portable data coupon for storage in the controller memory. In this embodiment the controller acts as the receiving apparatus for the data transmitted from the portable data coupon.

VBI data may provide differing information to the controller which is applicable to multiple uses. The VBI decoder of the controller incorporates the capability for decoding multiple categories of encoded data. A microprocessor or other programmable logic controller segregates the categories of data and a data formatter connected to the retransmission system formats the data corresponding to its category. Additionally, control signals generated by the controller are formatted for segregation from VBI data. The receiver in the portable data coupon discriminates between the formatted data categories to allow storing of only desired data in the portable data coupon or segregation of the data based on data category.

Clocks or other time keeping means are provided in the portable data coupon and the controller for time marking of data and comparison of time marked data with current time and date. Transmitted data may also incorporate time information which is employed for updating of the clocks in the controller and portable data coupon.

Data stored in the portable data coupon is selectively deleted manually or automatically after transmission from the data coupon for an end use. As

1 exemplified by the use of the portable data coupon for merchandise or service
discounts, transmission of the stored data relating to the discount equivalent to the
redemption of a paper coupon would result in automatic deletion of that data from
the memory of the portable data coupon thereby precluding reuse of the discount.

5 Brief Description of the Drawings

The present invention will be more clearly understood with reference to the
following drawings and detailed specification:

10 FIG. 1A shows in schematic form the electronic data coupon with display
controls and various interface devices in combination with a controller having
communications interfaces for the portable data coupon;

FIG. 1B provides a representation of the display of the portable data coupon
wherein the display mode shows a UPC bar code format for use with a laser
scanner;

15 FIG. 1C is a partial schematic representation of a second embodiment of the
portable data coupon employing a alphanumeric key pad for data input;

FIG. 2 is a schematic block diagram of the operational elements of the
portable data coupon;

20 FIG. 3 is a schematic block diagram of the controller for the vertical
blanking interval data application system;

FIG. 4 is a schematic block diagram for a redemption system for electronic
coupons provided as stored data for the portable data coupon; and

FIG. 5 is a pictorial view of the portable data coupon stored in a holder for
receiving transmitted data.

25 FIG. 6 is a block diagram schematic of an embodiment of the portable data
coupon for storage of a picture image allowing use as an electronic ID card.

Detailed Description

30 Referring to FIG. 1A, a portable data coupon 10 is shown to provide
practical secondary use of data transmitted in the vertical blanking interval of
television transmission signals. VBI data is decoded from the television
transmission signal by controller 12 which then transmits the data to the portable
electronic coupon. In the embodiment shown in the drawings, two transmission
35 methods are available. An IR emitter 14 which provides a wide band infrared
signal which is received by an IR detector 16 on the portable data coupon allows
"remote" communication with the portable data coupon. Alternatively, a serial
interface may be employed with a first moiety of a connector 18 in the controller

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1 receiving a mating second moiety of the connector 20 present on the portable data
coupon. Transmission of the data employing the IR emitter/detector combination
allows placement of the portable data coupon at any desired location where the
broad band infrared radiation from the emitter can be received. The serial interface
5 requires direct connection of the portable data coupon to the controller unit.

The portable data coupon includes a display 22 on which data received and
stored in the portable data coupon may be shown to the user. Controls for
operation of the portable data coupon including a "read" key 24 for calling data to
the display, a "cancel" key 26 for deleting data, a "save" key 28 for protecting
10 stored data as will be discussed subsequently, and a "send" key 30 for initiating
transmission of data stored in the portable data coupon. An IR emitter 32 is
provided for transmitting data stored in the portable data coupon to a receiving
apparatus responsive to the "send" key. Alternatively, data may be sent to a
receiving apparatus using the serial interface previously described for receiving
15 data.

In the embodiment shown in the drawings the controller also includes an IR
detector 34 for receiving data transmitted by the portable data coupon in various
applications to be described in greater detail subsequently.

The structure of the operating components of the portable data coupon are
20 best seen in FIG. 2. Encoded data transmitted by the controller is received through
the IR detector or serial port connector and provided to a microprocessor. The
microprocessor stores the data in a storage device such as a random access memory
(RAM) 36 for the embodiment shown in the drawings. Data manipulation in the
portable data coupon is provided by the microprocessor responsive to the controls
25 previously described which are generally described in FIG. 2 as controls 38. In
response to the user depressing the read key, the microprocessor will retrieve the
encoded data from a presently addressed memory location in the RAM and decode
the data for output through a driver 40 to the display. In the embodiment shown in
the drawings a Liquid Crystal Display (LCD) is provided with multiple
30 alphanumeric character capability.

Depressing the cancel key on the portable data coupon causes the
microprocessor to delete the data in the memory location corresponding to the data
on the display while depressing the send key will result in transmission of the data
in the memory location corresponding to the displayed data through the IR emitter
or serial port connector.
35

In the embodiment shown in the drawings data received by the portable data
coupon is placed in a temporary storage buffer of the RAM. This temporary

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1 storage comprises a predetermined number of storage locations addressed by the
microprocessor. When the temporary storage buffer is full additional data received
by the portable data coupon will be written into the temporary buffer by the
microprocessor over writing the oldest data in the buffer. A circular address
5 pointer system for first in, first out storage in the temporary buffer or similar
addressing technique is employed by the microprocessor. Data which the user
desires to retain is written from the temporary storage buffer to a protected buffer
by depressing the save key on the coupon. In response to the save key the
microprocessor will protect the data in the temporary storage buffer corresponding
10 to the data on the display by transferring the data to a protected or permanent
storage buffer in the RAM or alternatively setting a protect flag on the storage
location to prevent over-writing of the data.

The portable data coupon incorporates a clock 42 for timekeeping purposes
to provide current time and date and for time flagging of received data by the
15 microprocessor during storage. Encoded data received by the portable data coupon
can include time information decoded by the microprocessor for updating the
internal clock.

The microprocessor incorporates within the data handling capability a
sorting function for the data received to allow data of different formats to be
20 employed by the portable data coupon. Transmitted timekeeping data and data
received by the clock are exemplary of these data categories. Additional categories
for various applications of the portable data coupon will be described in greater
detail subsequently.

For certain applications data received by the portable data coupon will
25 incorporate "prompt" information to identify to the user the desirability of
transferring received data from the temporary storage buffer to protected storage.
A flashing character presentation on the display or an audible signal provided by a
beeper 44 under the control of the microprocessor are employed as the user prompt.
The user prompt provides an additional category of data received by the portable
30 data coupon.

Data stored in the portable data coupon is transferable to a receiving
apparatus through the IR emitter or the serial port connector. The portable data
coupon may therefore act as a data transfer device in addition to a data storage
device. Confirmation of the portable data coupon as the source for data transmitted
35 to such receiving apparatus is accomplished by a specific serial number or other
code for the portable data coupon stored in a read only memory (ROM) 46
accessible by the microprocessor for transmission with the data to the receiving

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1 apparatus. A receiving apparatus including a data transmission system through an
IR emitter or alternatively in a serial port connection can employ a dialog approach
with the microprocessor of the portable data coupon for review of data contained
within the portable data coupon, extraction of appropriate data and confirmation of
5 the identification of the portable data coupon.

An example of the operation of the portable data coupon in a primary
anticipated use provides supplemental data storage and "electronic coupons" for
discounts on merchandise or services offered in television commercials. During the
vertical blanking intervals of a television commercial, information associated with
10 the telephone number, address or selection information for local dealers of the
product or service are transmitted or details of offered discounts including
identification of merchandise, value of the discount, expiration date and so on. The
controller decodes the VBI data using standard techniques. The data present in the
VBI is further encrypted to avoid use by systems other than authorized portable data
15 coupons. The encoded data stripped from the VBI is retransmitted to the portable
data coupon where it is stored in temporary memory as previously described. The
coupon user may then retrieve the information from the memory through the use of
the read key. Telephone numbers, addresses and similar information are decoded
by the microprocessor and displayed on the portable data coupon for review by the
20 user through the use of the read key. Electronic coupon information is displayed in
one of several formats. An alphanumeric format showing the
vendor/producer/dealer, amount of discount and expiration date allows the user to
determine the value of the "electronic coupon." A standard UPC bar code format is
alternatively presented on the display through predetermined key strokes on the
25 existing keys or by way of a "shift" key (not shown) for use with redemption
systems employing a laser scanner or similar system. The UPC bar code system
allows easy comparison by automatic cash register systems of goods purchased.
Such a bar code display is shown in FIG. 1B.

At a predetermined time after completion of the television commercial to
30 allow the user to contemplate the information provided, a prompt command is
provided in the VBI data which is retransmitted by the controller to the television
screen or to the portable data coupon. Upon receiving the prompt command the
microprocessor activates the beeper or flashing display character to call the user's
attention to the fact that a coupon or other information has been provided. The user
35 may review the information using the read key and determine if the information
should be saved in protected storage to preclude over-writing by subsequent
commercial information. If the save key is pressed, the information is protected

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1 and may then be used subsequently for redeeming the "electronic coupon."
Alternatively, if the information is of no interest to the user, the cancel key may be
pressed and the data cancelled at that time.

5 The portable data coupon monitors expiration date information provided in
the encoded data and the microprocessor compares current time and date
information provided by the internal clock to the expiration date of information
present in data storage. Upon reaching a predetermined period prior to an
expiration date the microprocessor will display the information corresponding to the
10 approaching expiration date and prompt the user by activating the beeper or flashing
display cue. Data in protected and temporary storage which contains an expiration
date is monitored by the microprocessor and upon passing the expiration date the
memory locations are cleared thereby conserving memory resources.

15 An embodiment of the controller for use with the portable data coupon is
shown in FIG. 3. The controller may be incorporated in the television itself or
other product incorporating a VBI decoder and data retransmission system as
previously described. Incorporation of the controller into a VCR system is
accomplished in a present embodiment employing a system as disclosed in U.S.
Patent Application, Serial No. 08/014,541 filed on February 8, 1993, entitled
"Enhancing Operations of Video Tape Cassette Players" having a common assignee
20 as the present invention which is incorporated herein in its entirety by reference.

As shown in FIG. 3, the controller receives the television broadcast signal
on the video input line 48, video is also provided to the tuner of the television set
(not shown) for normal television viewing. A VBI decoder 50 receives the video
input signal and decodes the data provided in the vertical blanking interval under the
25 control of a microprocessor 52. Data formats for VBI data are well known in the
industry and exemplified by the report entitled "Recommended Practice for Line 21
Data Services Part 7 Extended Data Service Packets" draft EIA-608.

30 VBI encoder/decoder systems are well known in the art and are presently
employed for closed captioning for the hearing impaired. Formatting of specific
data types for recognition by the microprocessor allows the data storage capability
of the VBI to be employed for multiple uses. Various data provided in the vertical
blanking interval may include program information for television programs being
watched or taped. Commercial information, such as that previously described is
also provided in the VBI data. The VBI decoder incorporates a multiplexer under
35 the control of the microprocessor which segregates program information data from
data applicable to the portable data coupon.

1 In a first embodiment of the present system the coupon data stripped from
the VBI by the VBI decoder is provided directly to a retransmitter in the controller.
As previously described, this retransmitter may take the form of an IR emitter or a
standard serial port employing a hard wired connector.

5 In a second embodiment of the system the coupon data is directed from the
VBI decoder to a memory 54 internal to the controller for storage. This storage
allows delayed retransmission to the portable data coupon and under the control of
the microprocessor allows burst transmission of stored data in the memory as
opposed to real-time intermittent transmission provided by direct VBI decoding.
10 The memory capability of the controller is far less constrained by physical
dimensional requirements than the memory of the portable data coupon.
Consequently, operational scenarios for the system wherein data stripped from the
VBI is temporary stored in the controller and only downloaded to the portable data
coupon for use are envisioned.

15 The data extracted from the VBI by the decoder includes program
information or other data which may not be directly applicable to the portable data
coupon. Incorporation of the controller system in a VCR, as identified in the
exemplary referenced embodiment of Patent Application Serial No. 014,541 is
enhanced by providing capability in the controller for directing VBI data and other
20 control information to devices in addition to the portable data coupon. As shown in
FIG. 3 the microprocessor provides direct coded control data, for instance, control
information for a cable television decoder box, through a code data generator 56.
A data formatter 58 under control of the microprocessor provides transmission data
to the infrared emitter in specific formats for data categories. For example, as
25 shown in FIG. 3 category 1 data is control data output from the code data system
for control of a secondary apparatus by the microprocessor of the controller.
Category 2 information is program ID information provided from the controller
memory while category 3 data is commercial data available for the portable data
coupon. The controller incorporates a clock 60 for time keeping functions
30 providing an output through the data formatter under the control of the
microprocessor as category 4 data.

35 In certain applications the controller may be operable from a remote control
device as exemplified by a standard VCR remote controller. The IR detector 34 in
the controller is adapted to receive IR transmissions from such remote controllers
for processing by the microprocessor. The microprocessor in turn converts such
remote control inputs to code data for control of alternate devices such as the cable
box, television or the portable data coupon. Prompting of the portable data coupon

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1 user through the beeper on the coupon during a broadcast of commercial
information, as previously described, may be responded to by use of the remote
control wherein a predetermined key-stroke on the remote control provides an
infrared signal to the controller which is received on the IR detector and provided
5 by the controller microprocessor as a code data signal through the IR emitter of the
controller which is in turn received by the IR detector of the portable data coupon
to accomplish the save function without the user having to retrieve the coupon and
press the save button on the coupon itself. As previously described, the
microprocessor 35 in the portable data coupon incorporates data segregation
10 capability based on the data formats, consequently control data in the code data
format having a functional representation for the controls of the portable data
coupon may be received for "hands-off" operation of the portable data coupon
functions.

15 Use of a remote control for remote activation of control functions for
multiple portable data coupons is accomplished by including a card identification
number in the key stroke sequence thereby allowing different "electronic coupons"
or other data to be saved in separate portable data coupons.

20 In an additional alternate operational mode for the portable data coupon,
program information data stored in the controller memory for use with other
controller functions such as, video tape recording, may be downloaded into the
portable data coupon for transportation to a second controller. Downloading of the
program information would be accomplished under the control of the controller
microprocessor through the IR emitter or serial port connection in a data format
25 recognized by the portable data coupon. Data received by the portable data coupon
would be stored in temporary or protected storage buffers. Uploading of the data
from the portable data coupon to the second controller system would then be
accomplished by employing the send key 30 of FIG. 1a on the portable data coupon
for transmission of the data through the IR emitter 32 or serial port connector 20 to
the memory of the second controller.

30 An alternate embodiment of the portable data coupon for use without
retransmission capability from the controller employs a standard alpha-numeric
keypad 62 as represented in FIG. 1c. VBI data decoded from commercial
information incorporates a predetermined numerical code which is provided by the
controller to the user on the television screen for direct entry into the portable data
35 coupon using the keypad. For example, an encoded version of a standard UPC
code may be displayed on the screen which is entered by the user on the keypad and
decoded by the microprocessor in the portable data coupon resulting in a display of

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1 the vendor/dealer, product discount amount and expiration data. This data would then be available in protected storage of the portable data coupon for later use as previously described.

5 A redemption system for the implementation of the portable data coupon for "electronic coupons" is shown schematically in FIG. 4. A standard bar code scanning cash register system 64 having a scanner 66 is typically employed as a point of sale system. Products sold are scanned by the laser scanner using UPC bar codes and automatically registered in the cash register system with product identification and price. Presently available paper coupons typically employ a UPC
10 bar code which is scanned by the laser scanner, compared to the purchases made, and if the product has been purchased, the coupon discount is applied to the sales total. The portable data coupon may be employed in the same fashion by calling up the recorded discount in a UPC bar code format as previously described and shown in FIG. 1B. Scanning by the normal laser scanner then allows the cash register
15 system to confirm purchase of the discounted product and application of the appropriate discount to the sales total.

Paper coupons are typically collected upon redemption to avoid reuse. Store employees manually cancel each coupon after redemption using the cancel key on the portable data coupon. Alternatively, the portable data coupon, through use
20 of the IR detector 16, automatically deletes a scanned coupon by detection of the laser light signal in the IR detector. To avoid deletion of the "electronic coupon" prior to confirmation that the coupon has been accepted by the cash register system, an identification bit may be set in the storage location, resulting in a time delayed erasure of the coupon which is reversible, if the coupon has not in fact been
25 redeemed,
by a coded input by store employees on the controls of the portable data coupon.

A supplemental adapter for electronic coupons 68 for use with the portable data coupon provides a positive interactive communication means with a portable data coupon for enhanced reliability of the point of sale system. The portable data
30 coupon is placed in close proximity to the adapter for infrared signal transmission and reception, allowing a dialog interchange between the adapter and portable data coupon for evaluation and redemption of all "electronic coupons" corresponding to products purchased. The adapter incorporates an infrared emitter 70 and an infrared detector 72 for communication with the portable data coupon. The adapter
35 queries the portable data coupon by data transmission through the IR emitter 70 which is received by the IR detector 16 on the portable data coupon. Data transmitted by the portable data coupon on IR emitter 32 is received by IR detector

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1 72 in the adapter for processing by the cash register system. Upon confirmation of
the purchase of the discounted article, a cancellation signal is issued by the adapter
on the IR emitter 70, confirming redemption of the coupon. The redemption signal
is received by the IR detector 16 on the portable data coupon and data
5 corresponding to the discount is cancelled or erased from storage. A mating
connector moiety 74 is also provided in the adapter for connection to the connector
moiety 20 on the portable data coupon for communication through the serial
interface employing query and response for "electronic coupons" present in the
portable data coupon corresponding to products purchased.

10 Interrogation of the portable data coupon for serial number from the ROM
as previously described is employed as a security measure to avoid "pirate" portable
data coupons thereby reducing "coupon fraud."

Returning to the system embodiment of FIG 1a, to promote optimum
communications with the portable data coupon during remote data transfer from the
15 controller through broad band infrared transmission, placement of the portable data
coupon in reasonable proximity to the controller is required. As shown in FIG. 5,
a stand 76 comprising a channel having upstanding legs to support the portable data
coupon in an substantially vertical orientation is employed. The embodiment shown
in the drawings provides a front leg 78 of the channel having a vertical dimension
20 sized to allow exposure of the IR detector 16 and a second leg 80 having a vertical
dimension sufficient to support the portable data coupon in a substantially upright
position. Use of IR transparent materials for alternate embodiments of the stand
eliminates the requirement for a reduced vertical dimension of the first leg. A
holder for multiple portable data coupons employing a stepped arrangement between
25 compartments for individual coupons may be employed to provide optimum
exposure of the IR detector of each portable data coupon for data reception.

Yet another embodiment for use of the portable data coupon is shown in
FIG. 6. Photographic images taken by a video camera 82 are transmitted through a
photo adapter 84 employing an infrared emitter 86 to be received by the portable
30 data coupon on infrared detector 16. Use of the portable data coupon as an
electronic identification card is accomplished by requiring entry of a personal
identification number (PIN) known to the card owner and corresponding to the
serial number of the card stored in the ROM. Video data received from the photo
adapter is placed in permanent storage upon proper entry of the PIN. Data transfer
35 and interface control for the video data is accomplished through the use of an IR
detector 88 responsive to the IR emitter 32 of the portable data coupon.

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1 In operation, the system allows the user to select poses and replace the
stored video information as desired. However, the requirement for entry of the
PIN, prior to protected storage of the image precludes improper entry of
identification photos. Alternatively, the key board for entry of the PIN is
5 incorporated in the photo adapter and PIN information is verified by dialog
communications with the portable data coupon.

 Data communication between the photo adapter and portable data coupon is
accomplished in an alternative embodiment through the use of the connector and
serial port interface as previously described.

10 Having now described the invention in detail as required by the patent
statutes, those skilled in the art will recognize modifications and substitutions to the
embodiments disclosed herein. Such modifications and substitutions are
encompassed within the present invention as defined in the following claims.

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1 **WHAT IS CLAIMED IS:**

5 1. A portable data coupon comprising:
 means for receiving encoded data;
 means for storing the received data;
 means for selectively decoding and displaying the data present in the
storing means; and
 means for selectively transmitting the encoded data to a receiving
apparatus.

10 2. A portable data coupon as defined in claim 1 further comprising
means for confirming a unique identification of the data coupon to the receiving
apparatus.

15 3. A portable data coupon as defined in claim 1 further comprising
means for selectively deleting stored data.

20 4. A portable data coupon as defined in claim 1 wherein the means for
storing includes at least one temporary storage location and a plurality of protected
storage locations, said received data being stored in said at least one temporary
storage location and further comprising means for selectively transferring data from
said at least one temporary storage location to one of said protected locations.

25 5. A portable data coupon as defined in claim 4 further comprising a
plurality of temporary storage locations and means for addressing said temporary
storage locations, said addressing means sequentially addressing each temporary
storage location for storage of received encoded data and, when all temporary
storage locations are full, addressing the temporary storage location having the
oldest data for storage of newly received data.

30 6. A portable data coupon as defined in claim 1 further comprising a
time keeping means.

35 7. A portable data coupon as defined in claim 6 further comprising
means for storing current time and date from the time keeping means with received
data.

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1 8. A portable data coupon as defined in claim 6 wherein the encoded data includes current time and date information and further comprising means for updating said time keeping means to current time and date responsive to the encoded data.

5

 9. A portable data coupon as defined in claim 1 wherein the encoded data comprises merchandise or service discount information.

10

 10. A portable data coupon as defined in claim 9 wherein said discount information includes offerer identification and discount identification.

 11. A portable data coupon as defined in claim 9 wherein said discount information includes an expiration date.

15

 12. A portable data coupon as defined in claim 11 further comprising means for comparing the current date from the time keeping means to the date included in said discount information and means for deleting said data from the storing means when the expiration date exceeds the current date.

20

 13. A portable data coupon as defined in claim 11 further comprising indicating means responsive to the comparing means for indicating to a user when the current date reaches a predetermined period prior to the expiration date.

25

 14. A portable data coupon as defined in claim 9 wherein the encoded data includes identification of offerer, product or service, and discount amount in UPC format.

30

 15. A portable data coupon as defined in claim 14 wherein the decoding and display means selectively decodes and displays said encoded data in a first alpha numeric format and in a second bar code format and said portable data coupon further includes means for selection of display format.

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 16. A portable data coupon as defined in claim 1 wherein the means for receiving encoded data comprises an infrared detector.

 17. A portable data coupon as defined in claim 1 wherein the means for receiving encoded data comprises a serial input port.

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1 18. A portable data coupon as defined in claim 1 wherein the means for receiving encoded data comprises an alpha numeric key pad.

5 19. A portable data coupon as defined in claim 1 wherein the encoded data comprises a prompt signal and the portable data coupon further comprises means for indicating that a prompt has been received.

10 20. A portable data coupon as defined in claim 19 wherein the indicator means is a beeper.

 21. A portable data coupon as defined in claim 19 wherein the indicator means comprises a flashing visual indicator.

15 22. A vertical blanking interval data application system comprising:
 a controller connected to receive television signal transmissions including encoded data inserted in the vertical blanking interval of the television signal, said controller having:

20 a memory for storage of the encoded data received;
 means for transmitting the encoded data stored in the memory and,
 a portable data coupon having
 means for receiving the data transmitted by the controller;
 means for storing the received data;
 means for selectively decoding and displaying the data present in the storing means, and
25 means for selectively transmitting the encoded data to a receiving apparatus.

30 23. A vertical blanking interval data application system as described in claim 18 wherein said controller further comprises means for detecting data transmitted by said coupon said detection means connected to the memory for storage of the received coupon data.

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- 1 24. A vertical blanking interval data application system comprising:
 a controller connected to receive television transmission signals and
 having
 a VBI decoder for extracting encoded data from the vertical
5 blanking interval of the television transmission signal and
 means for retransmitting said encoded data; and,
 a portable data coupon having
 means for receiving the retransmitted encoded data,
 means for storing the received data,
10 means for selectively decoding and displaying the data present in the
 storing means, and
 means for selectively transmitting the encoded data to a receiving
 apparatus.
- 15 25. A vertical blanking interval data application system as defined in
 claim 24 wherein the controller further comprises:
 a memory connected to receive encoded data from the VBI decoder,
 and
 a multiplexer intermediate the VBI decoder and data retransmission
20 means and connected to the memory for selectively providing encoded data from the
 VBI decoder in a first state and from the memory in a second state to the data
 retransmission means.
- 25 26. A vertical blanking interval data application system as defined in
 claim 25 wherein the controller further includes a means for detecting encoded data
 transmitted by the transmitting means of the coupon said detection means connected
 to the memory for storing data from the coupon.
- 30 27. A vertical blanking interval data application system as defined in
 claim 25 wherein the VBI decoder includes means for categorizing encoded data
 received in the television transmission signal, and said controller further comprises:
 logic means for segregating the categories of data; and
 a data formatter connected to the retransmission means and
 responsive to the logic means for formatting data for retransmission corresponding
35 to the category of the data.

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1 28. A vertical blanking interval data application system as defined in
claim 27 wherein the multiplexer of the VBI decoder is responsive to the logic
means for directing data to the memory or the retransmission means based on the
category of the data.

5 29. A vertical blanking interval data application system as defined in
claim 27, further comprising a clock having a time data output and wherein the
logic means further segregates the time data as a category of data.

10 30. A vertical blanking interval data application system as defined in
claim 29, wherein station time data is a category of data received by the VBI
decoder and further comprising means for resetting the internal clock to equal the
station time data responsive to a control signal from the logic means.

15 31. A vertical blanking interval data application system as defined in
claim 27, wherein the portable data coupon further comprises means for detecting
data formatted by the data formatter, said detecting means selectively providing an
enable signal to the storing means to allow storing of received data.

20 32. A vertical blanking interval data application system as defined in
claim 27, wherein the controller further comprises means for generating control data
for operation of a secondary device, said control data segregated by the logic means
as a category of data and wherein said data formatter formats said control data for
transmission to the secondary device.

25 33. A vertical blanking interval data application system as defined in
claim 25 wherein the portable data coupon further comprises means for confirming
a unique identification of the data coupon to the receiving apparatus.

30 34. A vertical blanking interval data application system as defined in
claim 25 wherein the portable data coupon further comprises means for selectively
deleting stored data.

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1 35. A vertical blanking interval data application system as defined in
claim 25 wherein the means for storing in the portable data coupon includes at least
one temporary storage location and a plurality of protected storage locations, said
received data being stored in said at least one temporary storage location and further
5 comprising means for selectively transferring data from said at least one temporary
storage location to one of said protected locations.

10 36. A vertical blanking interval data application system as defined in
claim 35 wherein the portable data coupon further comprises a plurality of
temporary storage locations and means for addressing said temporary storage
locations, said addressing means sequentially addressing each temporary storage
location for storage of received encoded data and, when all temporary storage
locations are full, addressing the temporary storage location having the oldest data
for storage of newly received data.

15 37. A vertical blanking interval data application system as defined in
claim 25 wherein the portable data coupon further comprises a time keeping means.

20 38. A vertical blanking interval data application system as defined in
claim 37 wherein the portable data coupon further comprises means for storing
current time and date from the time keeping means with received data.

25 39. A vertical blanking interval data application system as defined in
claim 37 wherein the encoded data includes current time and date information and
wherein the portable data coupon further comprises means for updating said time
keeping means to current time and date responsive to the encoded data.

30 40. A vertical blanking interval data application system as defined in
claim 25 wherein the encoded data comprises merchandise or service discount
information.

35 41. A vertical blanking interval data application system as defined in
claim 40 wherein said discount information includes offeror identification and
discount identification.

42. A vertical blanking interval data application system as defined in
claim 40 wherein said discount information includes an expiration date.

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1 43. A vertical blanking interval data application system as defined in
claim 42 wherein the portable data coupon further comprises means for comparing
the current date from the time keeping means to the date included in said discount
5 information and means for deleting said data from the storing means when the
expiration date exceeds the current date.

10 44. A vertical blanking interval data application system as defined in
claim 40 wherein the encoded data includes identification of offeror product or
service and discount amount in UPC format.

15 45. A vertical blanking interval data application system as defined in
claim 25 wherein the decoding and display means of the portable data coupon
selectively decodes and displays said encoded data in a first alphanumeric format
and in a second bar code format and said portable data coupon further includes
means for selection of display format.

20 46. A vertical blanking interval data application system as defined in
claim 25 wherein the retransmitting means comprises an infrared emitter and
wherein the means for receiving the retransmitted encoded data comprises an
infrared detector.

25 47. A vertical blanking interval data application system as defined in
claim 25 wherein the means for retransmitting comprises a serial output port and
wherein the means for receiving the retransmitted encoded data comprises a serial
input port.

30 48. A vertical blanking interval data application system as defined in
claim 25 wherein the means for retransmitting said encoded data comprises means
for displaying said encoded data and wherein the means for receiving the
retransmitted encoded data comprises an alphanumeric keypad.

35 49. A method for data retrieval and use comprising the steps of:
 encoding data in a predetermined transmission format;
 broadcasting the encoded data as a portion of a television
transmission signal during the vertical blanking interval portion of the signal;
 receiving the television signal with a VBI decoder and extracting the
encoded data from the vertical blanking interval;

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1 retransmitting the encoded data;
receiving the retransmitted encoded data in a portable data coupon;
storing the received data in the portable data coupon;
selectively decoding and displaying the data present in the portable
5 data coupon; and
selectively transmitting the encoded data from the portable data
coupon to a receiving apparatus.

10 50. A method for data retrieval and use as defined in claim 49 further
comprising the step of intermediately storing the encoded data in a memory prior to
retransmission.

15 51. A method for data retrieval and use as defined in claim 49 wherein
the step of receiving the television transmission signal includes the step of
identifying the encoded data according to predetermined categories and wherein the
step of retransmitting the encoded data includes the step of formatting the encoded
data for retransmission corresponding to the category of the data.

20 52. A method for data retrieval and use as defined in claim 51 wherein
receiving the retransmitted encoded data in the portable data coupon includes the
step of identifying the data category and wherein storing the received data in the
portable data coupon includes the steps of selecting data for storage based on the
categories identified and storing said selected data.

25 53. A method for data retrieval and use as defined in claim 49 wherein
the step of storing the data in the portable data coupon comprises the step of storing
the encoded data in a temporary storage location in the portable data coupon and
further comprising the step of selecting encoded data from temporary storage for
protected storage.

30 54. A method for data retrieval and use as defined in claim 53 wherein
the step of storing the encoded data in temporary storage further includes the steps
of:

35 determining when all temporary storage locations are full;
determining which temporary storage location contains the oldest
data; and

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1 storing newly received data in the storage location having the oldest
data.

5 55. A method for data retrieval and use as defined in claim 45 wherein
the step of selectively transmitting the encoded data to a receiving apparatus further
comprises the step of transmitting a unique identification of the portable data coupon
to the receiving apparatus.

10 56. A method for data retrieval and use as defined in claim 49 further
comprising the step of:

deleting data stored in the portable data coupon after selectively
transmitting the data to a receiving apparatus.

15 57. A method for data retrieval and use as defined in claim 49 wherein
selectively transmitting the encoded data from the portable data coupon to a
receiving apparatus comprises the steps of:

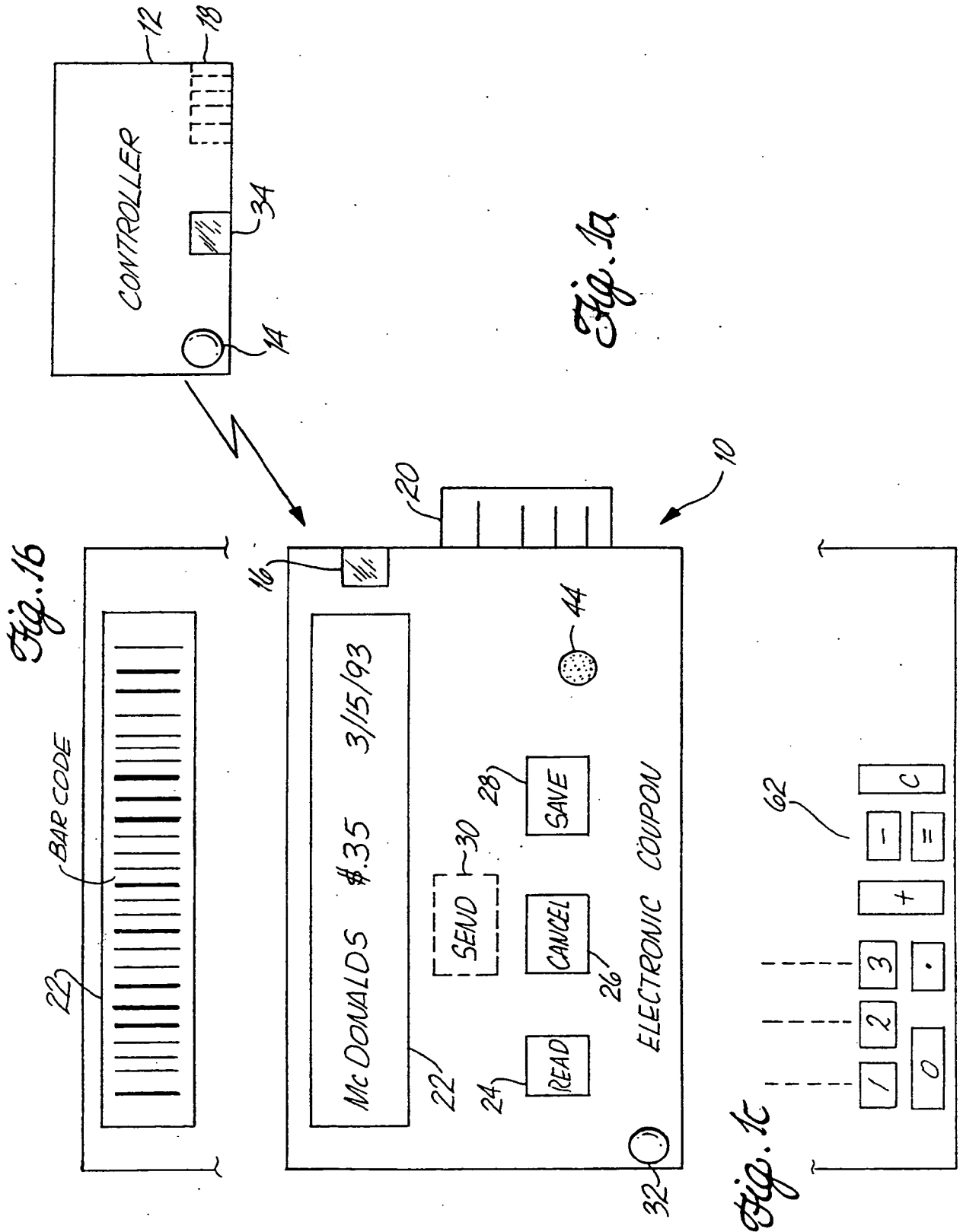
20 querying the portable data coupon to determine if encoded data
corresponding to desired data is present in a storage location; and
transmitting the data from the storage location of the portable data
coupon.

58. A method for data retrieval and use as defined in claim 57 wherein
the steps of querying and retrieving are repeated for all desired data.

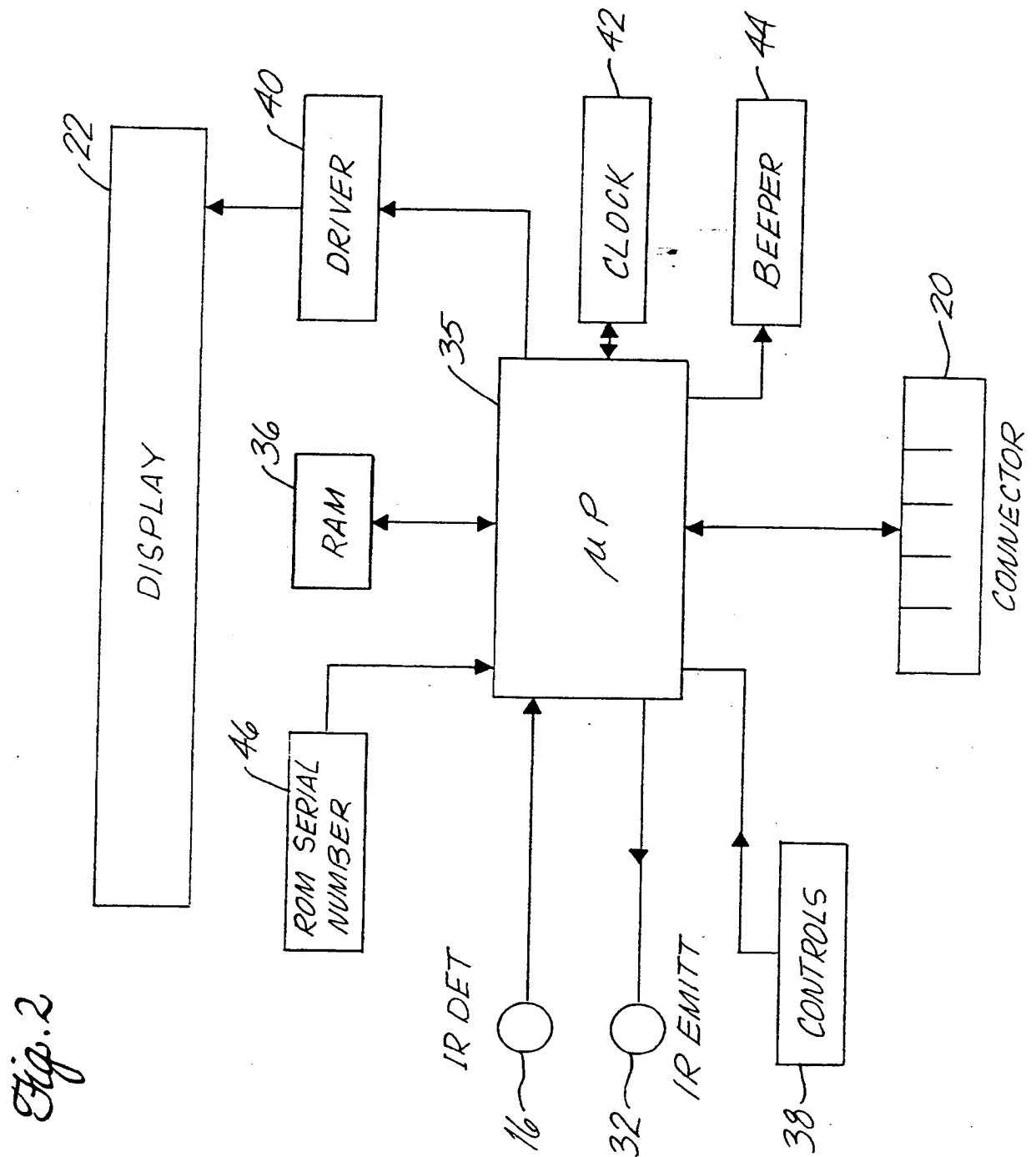
25 59. A method for data retrieval and use as defined in claim 57 further
comprising the step of deleting data which has been transmitted from storage.

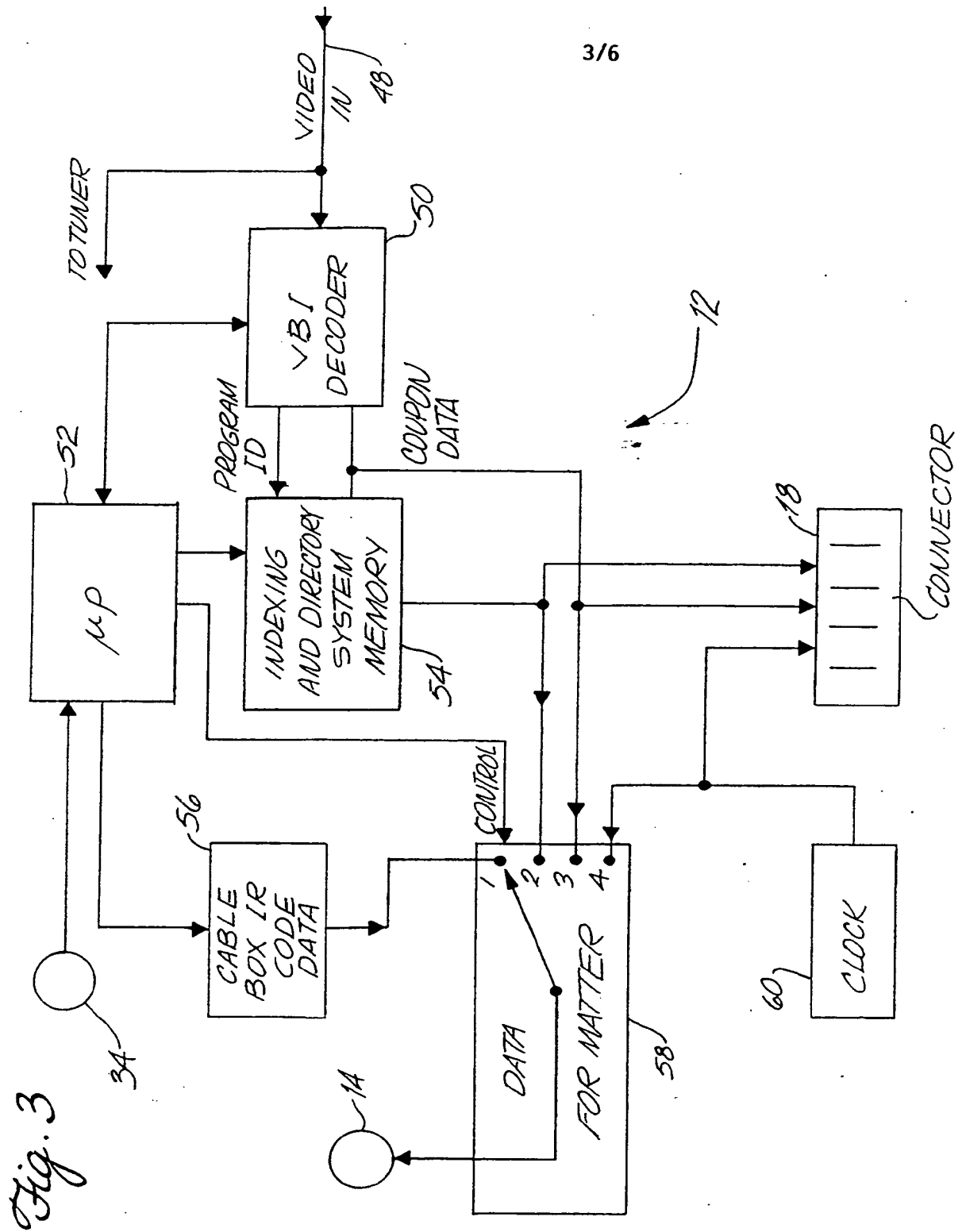
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Fig. 4

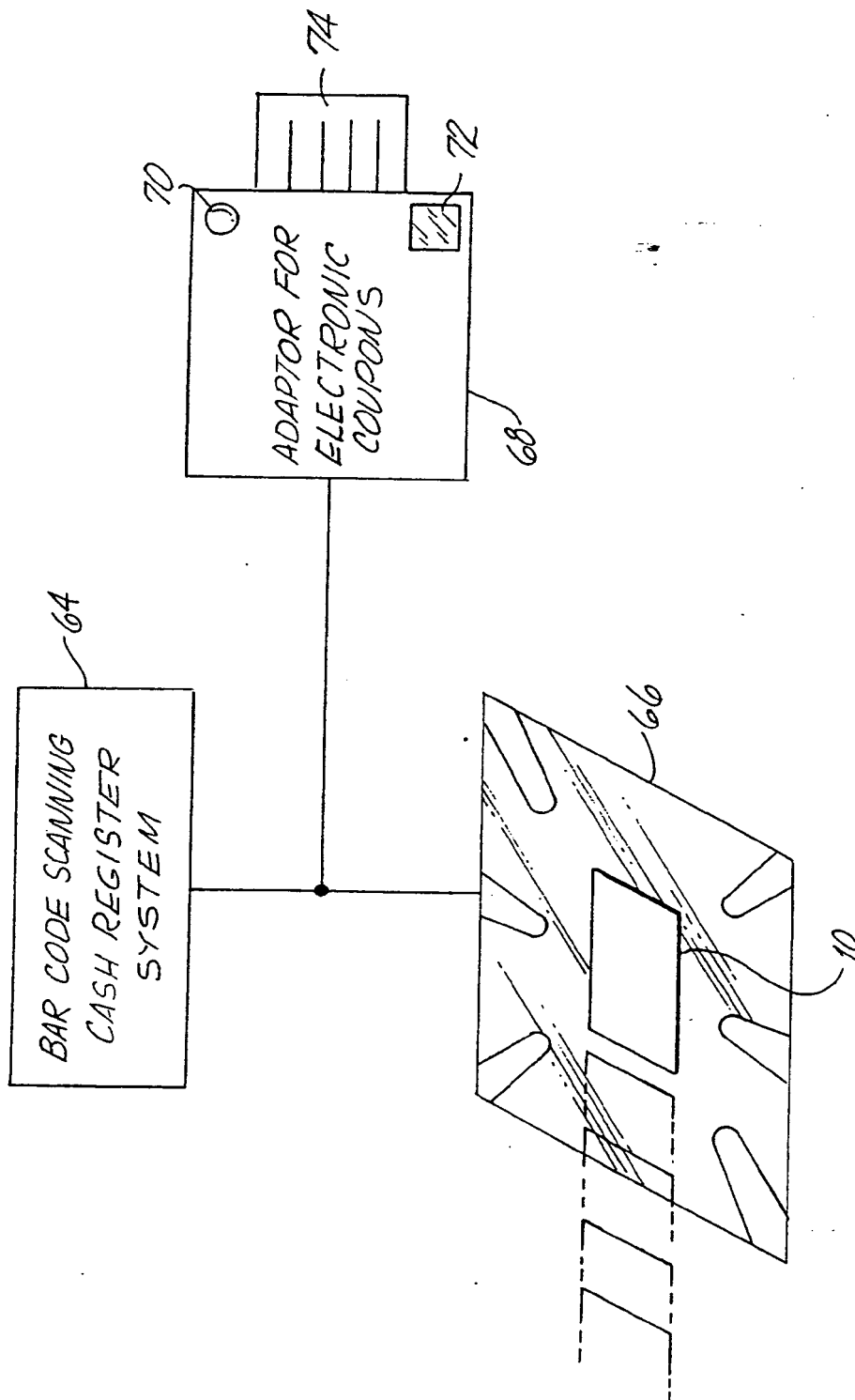
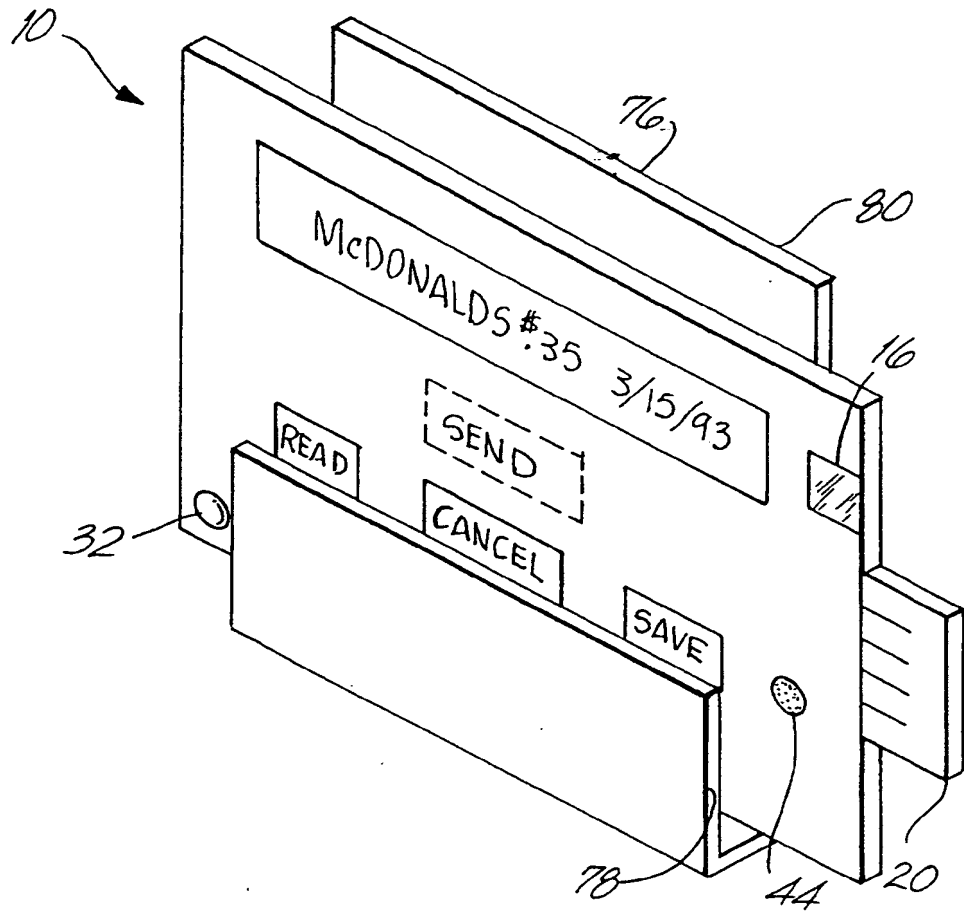
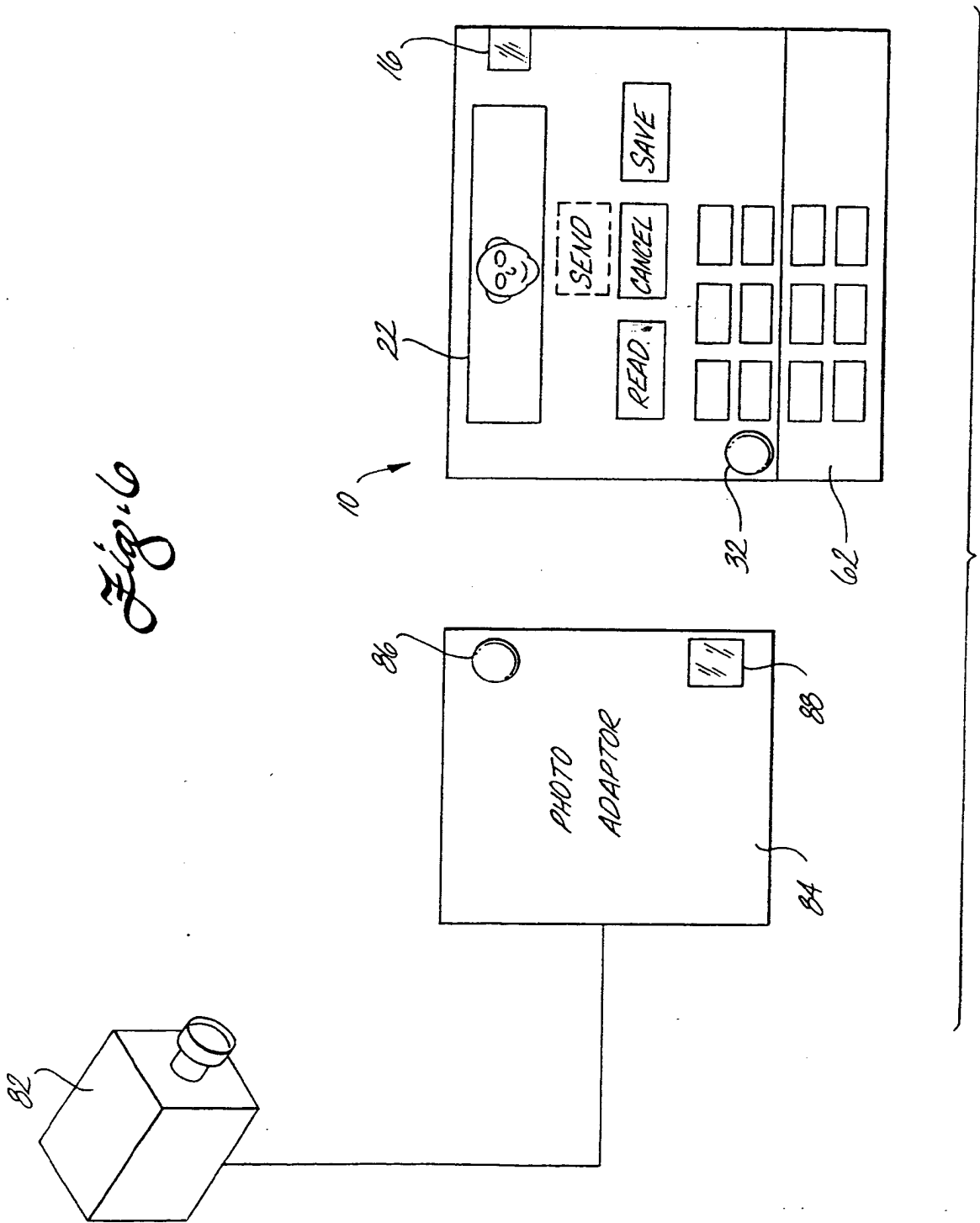


Fig. 5



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Fig. 6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/03891

A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : H04N 7/087, 7/16

US CL : 348/460, 461, 478, 3; 235/380

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 3,848,082 (SUMMERS) 24 NOVEMBER 1974 figure 2, col. 4, lines 25-27, col.7, lines 15-16	1, 6, 9
X	US, A, 5,192,854 (COUNTS) 09 MARCH 1993 figures 1 and 2, col. 3, lines 48-50, col. 4, lines 6-10 col. 3, lines 34-39, col. 3, lines 65-67	1-4, 6, 9-11, 14,16
X,P	US, A, 5,287,181 (HOLMAN) 15 FEBRUARY 1994 figure 1, col. 6, lines 16-20, 54-60, col. 7, lines 52-61 figure 6, col. 3, lines 15-27, figure 5,	1-3, 6 9-11

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
I document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

09 JUNE 1994

Date of mailing of the international search report

27 JUL 1994

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/03891

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US, A, 5,249,044 (VON KOHORN) 28 SEPTEMBER 1993, figures 2 and 6, col. 12, lines 39-51, col. 10, lines 27-29, col. 8, lines 5-18, col. 4, lines 15-51, 65-69, col. 5, lines 1-6.	1, 3, 6 9, 10
A	US, A, 5,070,404 (BULLOCK et al.) 03 DECEMBER 1991, figure 3	1-21
A	US, A, 5,057,915 (VON KOHORN) 15 OCTOBER 1991, figure 8	1-21
A,P	US, A, 5,294,782 (KUMAR) 15 MARCH 1994 figure 1	1-21
A,P	US, A, 5,282,249 (COHEN et al.) 25 JANUARY 1994, figs. 1-5	1-21
A	US, A, 5,276,311 ((HENNIGE) 04 JANUARY 1994 figure 1	1-21
A	US,A, 5,189,287 (PARIENTI) 23 FEBRUARY 1993 figure 1	1-21

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/03891

B. FIELDS SEARCHED

Minimum documentation searched

Classification System: U.S.

348/478,473, 460,461,1,3,12,13; 358/84,86,147; 455/2,4.2,5.1; 235/380,381,383
H04N 7/16; 7/087

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